Cross-Modality and Multi-Modality Imaging Topics, Other

Description of cardiovascular imaging abnormalities among hospitalized COVID-19 patients with elevated cardiac biomarkers

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Background and aims: Myocardial injury is commonly encountered among severely-ill COVID-19 patients. Underlying mechanisms, however, remain incompletely understood. Describing cardiovascular imaging (CVI) abnormalities in this population will provide additional insight into mechanisms of myocardial injury with COVID-19 and may potentially guide management for these patients. Therefore, we aimed to describe CVI abnormalities in COVID-19 patients with elevated high-sensitivity cardiac troponin (hs-cTn).

Methods: Consecutive hospitalized COVID-19 patients (n = 694) between February and July 2020 were retrospectively identified, including 409 patients with available hs-cTn (≥14 ng/dL was considered abnormal) Abnormality with any CVI—including transthoracic echocardiography (TTE), cardiac CT angiography, cardiac MR or invasive coronary angiography (ICA)—were identified through review of electronic records.

Results: Hospitalized COVID-19 patients with abnormal hs-cTn (107/409; 26.2%) had more frequent utilization of CVI compared with those with normal hs-cTn (61.7% vs. 30.5%, OR:3.7, 95%CI [2.3,5.8]) or those without available hs-cTn data (61.7% vs. 29.9%, OR:3.8, 95%CI [2.4,6]). Most utilized CVI modalities were TTE (63/107; 58.9%) followed by ICA (6/107; 5.6%). Echocardiographic abnormalities detected include right or left ventricular systolic dysfunction (22%), pericardial effusion (11%), while coronary artery disease was identified in 83.3% of patients who underwent ICA.

Conclusion: In this single center experience, cardiac biomarker elevation in hospitalized COVID-19 patients was associated with a 3-fold increase in the likelihood of CVI utilization, most commonly TTE. Ventricular systolic dysfunction and severe coronary artery disease were commonly encountered in patients with abnormal hs-cTn. However, these results need to be interpreted in the context of inconsistent use of CVI in patients with elevated cardiac biomarkers, which may preclude arrival at definitive conclusions. Prospective studies with standardized use of CVI in high-risk COVID-19 patients are warranted to advance our understanding of cardiac toxicity with COVID-19.